

SOV/124-57-8-9209

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 91 (USSR)

AUTHORS: Komarovskiy, A. A., Verteshev, M. S., Strel'tsov, V. V.

TITLE: The Hydraulic Resistance of a Layer Consisting of Particles of Arbitrary Shape (Gidravlicheskiye soprotivleniye sloya chastits proizvol'noy formy)

PERIODICAL: Tr. Novocherkas. politekhn. in-ta, 1956, Vol 41 (55), pp 41-57

ABSTRACT: The resistance of a layer consisting of particles of arbitrary shape can be expressed in terms of the resistance of a layer consisting of equidimensional spherical particles with the use of a so-called layer coefficient. A survey is made of the results of numerous investigations on the resistance of a layer, wherein the formulas propounded by the various authors are provided in terms of a consistent system of parameters. Test results obtained by the authors with respect to the measurement of the resistance offered by layers consisting of aluminum cylinders (4 specimens) and of sand particles 0.45, 0.90, 1.80 mm are adduced. In their analysis of the test results the authors employ a well-substantiated formula of the type

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$$\zeta = \frac{a}{R} + b \quad (\text{where } R \text{ is the Reynolds number}).$$

SOV/124-57-8-9209

The Hydraulic Resistance of a Layer Consisting of Particles of Arbitrary Shape

For the layer consisting of spherical particles they employ the formula

$$\zeta_0 = \frac{72.6}{R} + 0.9$$

which differs only in the magnitude of the free term from the formula previously proposed by N. M. Zhavoronkov (Zhavoronkov, N. M., Aerov, M. E., Umnik, N. N., Zh. fiz. khimii, 1949, Vol 23, Nr 3, p 342). Values of the layer coefficient obtained in seven tests by the authors are presented in tabular form. Bibliography: 23 references.

Ye. M. Minskiy

Card 2/2

KOMAROVSKIY, A. A. ~~Strel'tsov, V. V.~~

AUTHOR: Komarovskiy, A. A., Candidate of Technical Sciences, Strel'tsov, V. V. 64-58-3-12/20

TITLE: On the Computation of the Optimum Working Regime of Filters With Periodic Action (O raschete optimal'nogo rezhima raboty fil'trov periodicheskogo deystviya)

PERIODICAL: Khimicheskaya Promyshlennost', 1958, Nr 3, pp 15-48 (USSR)

ABSTRACT: It is stated that the computation equation of Rhodes (Ref 1) can be employed for the first period of scavenging by pressing out the liquid, but not for the second period which was referred to as diffusion scavenging, as there is really no considerable effect of the diffusion on the scavenging as was proved by experimental data. Starting from the assumption that residual quantities of the mother liquor remain in the comparatively large cavities of the Svitlend filter it is supposed in the present paper that these quantities are mixed up with the scavenging liquid and thus a solution of variable concentration is scavenged. According to the law of changes in concentration in dissolved substances considerations and computations are given which prove that there are three periods. The compu-

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On the Computation of the Optimum Working Regime of  
Filters With Periodic Action

64-58-3-12/20

tation equations and results inferred from that which are based on a laminar flow of the liquid in the canals of the filter cake are confirmed by the investigation results of Crosier and Brownell (Ref 11), and on the other hand render it possible to compute the optimum regime of the filters mentioned in the title above. With that the computation method remains the same as before, but the function of the coefficient of the scavenging conditions  $A$  (which corresponds to one of the three periods in which the termination of the scavenging takes place) of the ratio  $V/V_0$  must be considered. For the latter, separate equations are given each of the three periods. There are 12 references, 10 of which are Soviet.

1. Particulate filters--Performance
2. Mathematics

Card 2/2

KOMAROVSKIY, A.A., kand. tekhn. nauk; STREL'TSOV, V.V.

Calculating optimum operating conditions for intermittent filters.  
Khim. prom. no.3:173-176 Ap-May '58. (MIRA 11:6)  
(Filters and filtration)

STREL'TSOV, V.V.; KOMAROVSKIY, A.A., kand.tekhn.nauk

Mass transfer from a stationary granular layer to flowing liquid.  
Khim. nauka i prom. 3 no.4:511-519 '58. (NIRA 11:10)  
(Mass transfer)

KOMAROVSKIY, A.A.; STREL'TSOV, V.V.; VERTESHEV, M.S.

Investigating mass transfer during the dissolution in fixed and fluidized beds. Izv.vys.ucheb.zav.; khim.i khim.tekh. 2 no.5: 810-817 '59. (MIRA 13:8)

1. Novocherkasskiy politekhnicheskiy institut, kafedra tekhnologii neorganicheskikh veshchestv.  
(Mass transfer)

28(5)

06228  
SOV/64-59-6-20/28

AUTHORS: Komarovskiy, A. A., Verteshev, M. S., Docent, Candidate of Technical Sciences

TITLE: On the Intensity of Mass Transfer in the Dissolution in an Immobile and Suspended Layer

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 6, pp 530 - 533 (USSR)

ABSTRACT: It has been stated (Ref 1) that the coefficient of mass transfer in an immobile layer is greater than in a suspended one. This holds for the coefficients of heat and mass transfer in the case of small particles, while in the case of bigger particles the heat transfer coefficient is greater in a suspended layer than in an immobile one (Ref 2). The authors of the paper under consideration carried out investigations of the dissolution of salts in immobile and suspended layers (Refs 8-12) and derived the corresponding equations, (1) and (2), which have been proved to hold by the experimental results obtained with systems NaCl - water or  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  - water (Equation (1)) and systems NaCl,  $\text{KNO}_3$ ,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  - water (Equation (2)), respectively. The mass transfer coefficients  $\beta_f$  for the immobile and suspended layer are derived from equations (1) and (2), and the intensity of mass transfer in the two cases is studied by means of the example of common salt at  $18^\circ$ . The dependence of  $\beta_f$  on

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On the Intensity of Mass Transfer in the Dissolution  
in an Immobile and Suspended Layer

06228

SOV/64-59-6-20/28

the rate of filtration  $w_f$  and the particle diameter  $d$  was investigated. An increase in  $w_f$  has a greater effect upon  $\beta_f$  in the immobile layer than in the suspended layer (Fig 1). An increase in  $d$  results in a lowering of  $\beta_f$  in the immobile layer, while  $\beta_f$  increases slightly in the case of the suspended layer. In order to assess the effective use made of the space units available in the apparatus the value  $\beta_v$  rather than  $\beta_f$  has to be used, which refers to one unit of space of the layer. In investigations of the dependence of  $\beta_v$  on  $w_f$  and  $d$  show that  $\beta_v$  decreases in the suspended layer and increases in the immobile layer as  $w_f$  increases (Fig 2). The dependence of the mass transfer coefficient  $\beta_1$ , which takes into consideration the loss of work (due to the overcoming of the hydraulic resistance), shows (Fig 3) that in the suspended layer  $\beta_1$  greatly decreases as the particles become bigger, while  $\beta_1$  in the immobile layer does not so much depend on the particle size. There are 3 figures and 16 references, 10 of which are Soviet.

Card 2/2

STREL'TSOV, V.V., kand.tekhn.nauk; KOMAROVSKIY, A.A., kand.tekhn.nauk

Calculation of a continuous apparatus for dissolving salt in a  
stationary bed. Khim.prom. no.7:624-627 O-N '59. (MIRA 13:5)  
(Salt) (Solubility)

KOMAROVSKY, A. A., and STREL'TSOV, V. V.

"Superposition of Natural Convection on Forced one at  
Mass Transfer in a Liquid Flow Through an Immovable Granular  
Layer."

Report submitted for the Conference on Heat and Mass Transfer,  
Minsk, BSSR, June 1961.

KOMAROVSKIY, A.A.

Continuous ion exchange process in stopped-countercurrent type  
apparatus with a fluid bed of ion exchanger. Zhur.prikl.khim.  
36 no.6:1217-1223 36 no.6:1217-1223 Je '63. (MIRA 16:8)

1. Novocherkasskiy politekhnicheskiy institut imeni S.Ordzhonikidze.  
(Ion exchange) (Fluidization)

KOMAROVSKIY, A.A.

Equations of the ionic balance and the kinetics of mass transfer  
in a continuous process of ion exchange in a stage-countercurrent  
type apparatus with a fluid ion exchange bed. Zhur.prikl.khim.  
36 no.6:1224-1231 Je '63. (MIRA 16:8)

1. Novocherkasskiy politekhnicheskii institut imeni S.Ordzhonikidze.  
(Ion exchange) (Mass transfer) (Fluidization)

L 12967-63 EMT(m)/BDS RM  
 ACCESSION NR: AP3000399

S/0191/63/000/005/0032/0036

AUTHOR: Verteshev, M. S.; Komarovskiy, A. A.

TITLE: Hydraulic classification of ion-exchange resins 1 51

SOURCE: Plasticheskiye massy\*, no. 5, 1963, 32-36

TOPIC TAGS: hydraulic classification, ion-exchange resins, hydraulic sorter

ABSTRACT: The construction and operation of an improved direct-acting, suspended-layer hydraulic sorter are described and illustrated (see Figure 1, Enclosure 1 and caption, Enclosure 2). Laboratory-tested with a number of ion-exchange resins (KU-1, KU-2, AV-166, AV-17, EDE-10P, and AN-2FG), the device achieved adequate fraction purity with a specific load of no more than 1 kg of the initial ion-exchange resin per m<sup>2</sup> sup 2 classification chamber cross-section per second. A method is presented for determining sorter dimensions. Also described is a rapid classification method for industrial use, utilizing weights, a timer, and the granulometric curve of the starting mixture. Suspended-layer hydraulic classification eliminates granule damage occurring with the mechanical handling of ion-exchange resins. Orig. art. has: 4 figures, 22 equations.

ASSOCIATION: none

SUBMITTED: 00000000

SUB CODE: MA

Card 1/3/

DATE ACQ: 10 Jun 63

NO REF SOV: 005

ENCL: 02

OTHER: 000

VERTISHEV, M.S.; KOMAROVSKIY, A.A.

Hydroclassifier for fine grain material. Gor. zhur. no.5:75 My  
'63. (MIRA 16:5)  
(Pre dressing--Equipment and supplies)

KOMAROVSKIY, Aleksand Borisovich, zhurnalis'; RABINOVICH, M., red.

[A month in the director's chair; a business diary] Mes-  
siats v direktorskom kresle; delovoi dnevnik. Moskva,  
Politizdat, 1965. 86 p. (MIRA 19:1)

1. Korrespondent "Ekonomicheskoy gazety" (for Komarovskiy).

1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSES AND PROPERTIES INDEX																			
<p><i>Handwritten: 7</i></p> <p>The determination of manganese in steel. A. G. Komarovskii, <i>Bull. acad. sci. U.S.S.R., Div. Phys. 9, 671-2 (1943) (English summary)</i>. A visual method of detg. Mn in steel by means of a stereoscope is described. It was found that thermal treatment of the steel had no influence on the results. Cr up to 3%, Ni to 1.5%, W to 4%, Al to 2% do not affect the results. S. Pakser</p>																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
120000 000										120000 000									
120000 000										120000 000									

KOMAROVSKIY, A. G.

PA 2MT85

SSSR/Metals - Spectrographic Analysis May/June 1947  
Iron Alloys  
Chromium Alloys

"Spectral Analysis of Iron-Chrome System Alloys,"  
A. G. Komarovskiy, 3 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol II, No 3

Resultant data is given in tabular form. The author states that the presence of small amounts of nickel (up to 1.5%), tungsten (up to 4%), molybdenum (up to 2%) or vanadium (up to 1.5%), has no effect on the determination of the amount of chrome. The presence of Ni 14 + 15% and W 10 + 17% had a definite effect on the determination of chrome in steel. Submitted at the Central Research and Investigation Institute of Technology and Machine Construction, SSSR.

CA

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Influence of the structure of the alloy and of the presence of a third element on the determination of manganese and of chromium in steels. A. G. Komarovskiy. *Izv. Akad. Nauk S.S.S.R., Ser. Fiz.* 12, 422-28 (1978).  
Spectroscopic detn. of Mn by the line pair Mn 2933.061-Fe 2730.74 Å., and of Cr by the pair Cr 3128.7-Fe 3167.8 Å., is not affected by the thermal treatment of the iron, annealing or quenching. With regard to the influence of alloying elements, the detns. of Mn is sensitive to Ni, Cr, W, Mo, V, Si, and C. The calibration line, log of the ratio of intensities of the Mn and Fe lines, plotted against log concn. of Mn, is shifted upwards, parallel to itself, by Cr 2-7, W 4-20, Mo 0.2-1.5%; within these limits, all points lie on the same line. A still higher-lying line is obtained with Ni 2-25, Cr 7-18, W 2-7, Mo 0.4-7, V 0.2-1.5, Si 0.6-3, C 0.4-3%. With 8% Mn, up to 9%, Ni have no effect on the calibration line. In low-alloy steels, up to Ni 5, Cr 6, W 4, Mo 2, V 1.5, Al 2, and Cu 0.3%, have no influence on the detn. of Mn. The spectroscopic detn. of Cr is unaffected by W 0.2-21, V 0.5-1.5, Mo 0.2-1.5%, and, in high-alloy steels with up to 28% Cr, by 2-27.5% Ni. In low-alloy steels, up to Ni 5, W 4, Mo 2, V 1.5, and Mn 1.5%, do not affect the detn. of Cr.  
N. Thon

15

**Determination of Small Amounts of Calcium in Steel by Spectrographic Analysis. (In Russian.) A. G. Kuzmarovskii, *Zavodskaya Laboratoriya* (Factory Laboratory), v. 15, Dec. 1949, p. 1435-1437.**

Describes method for the above. Includes calibration curves and typical data.

CA

7

Influence of third elements on the determination of tungsten, cobalt, molybdenum, nickel, chromium, manganese, boron, aluminum, and niobium in heat-resisting steels. A. G. Komarovskii. *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 14, 572-8 (1930); cf. C.A. 44, 3837g. —Forty-eight binary alloys and 64 other heat-resisting and complex-alloyed steels (also contg. C, Si, V, Ti, and Cu) were analyzed spectrographically. Working curves for all elements and a table of line pairs of spectral lines are given. It can be seen that the presence of other elements displaces the straight lines for binary mixts. In the working curves to higher values of the ratio of intensities and parallel to the original lines. It is shown that if suitable curves are selected, the errors in the detn. of the elements can be limited to 2-3%.

S. Paksner

Journal of the Iron and Steel Institute  
Vol. 176  
Apr. 1954  
Analysis

①  
Determination of Small Contents of Boron in High-Temperature Alloys. A. G. Koniarovskii. (*Zavodskaya Laboratoriya*, 1950, 18, (10), 1228-1230). (In Russian). The spectral determination of boron in high-temperature alloys and alloy steels was investigated using specimens covering a wide range of compositions of alloying elements and boron contents of 0.003 to 0.16%. The lines B 2490.778 and Fe 2493.25 Å were used with photometric interpolation giving relative errors of  $\pm 2.8\%$ . Working curves, including one for ordinary steel, are presented. —S.K.

11-5-54  
ml

Central Sci. Res. Inst. Tech. & Mach. Construction.

KOMAROVSKIY, A. G.

IA 169T60

*Start*  
USSR/Metals - Cast Iron, Spectrum  
Analysis

Sep 50

"Determination of Magnesium in Cast Irons by the  
Spectrum Method," A. G. Komarovskiy, Cen Sci Res  
Inst of Technol and Mach Bldg

"Zavod Lab" Vol XVI, No 9, 1132-1133

Describes experiments for developing method for  
spectrum determination of Mg in cast irons.  
Quartz spectrograph of LSP-22 type was used and  
calibration curves were plotted for both spark  
and arc excitation sources. Accuracy of method  
is 2.3%.

169T60

KOMAROVSKIY, A.G., kand.tekhn.nauk, starshiy nauchnyy sotrudnik; PROKOF'YEV, V.K., doktor fiz.-matem.nauk, prof., otv.red.; TYUMENEVA, S.T., inzh., doktor fiz.-matem.nauk, otv.red.; FREGIER, D.P., tekhn.red.

[Method of parallel curves and a system of standards in the analysis of alloyed steels] Metod parallel'nogo grafika i sistema etalonov pri analize legirovannykh stalei. Leningrad, 1952. 11 p. (Informatsionno-tekhnicheskii listok, no.71 (412)).

(MIRA 14:6)

1. Leningradskiy Dom nauchno-tekhnicheskoy propagandy. 2. Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (for Komarovskiy). 3. Leningradskiy Dom nauchno-tekhnicheskoy propagandy (for Tyumeneva).

(Steel alloys—Spectra)

KOMAROVSKIY, A. G.

USSR/Chemistry -- Quantitative analysis

Card 1/1 Pub. 43 - 57/97

Authors : Komarovskiy, A. G.

Title : Quantitative spectral analysis of high alloyed steel and fire resistant alloys and a rational system of standards for carrying out the analysis

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, 277-278, Mar-Apr 1954

Abstract : Brief summary is presented of a report regarding standards for carrying out quantitative spectral analyses of high-alloyed steel and heat resistant alloys. Table.

Institution : Central Scientific Research Institute of Machine Construction Technology

Submitted : .....

KOMAROVSKIY, A.G.

ME  
Hoch Des  
1984  
Had Had South  
Translation No. 3842  
SSS No. 12

the Use of the Parallel Graph Method in Spectrographic  
Analysis of Steels. Yu. M. Buravlov. Rapid Spectroscopic  
Analysis of High-Alloy Steels and Alloys. A. J. H. M. and  
Izvest. Akad. Nauk SSSR, Seriya Fiz., 1965, 12, 2, 154-157.  
47-159. Si, Mn, Cr, Ni, Mo, Ti, W, V, Co, Al, Fe and Ni are  
included. Three standard curves are given for each of the  
three defined groups of alloys.

KOMAROVSKIY, A.G.

Rapid quantitative spectrum analysis of high-alloy steel and other alloys. Izv.AN SSSR.Ser.fiz.19 no.2:167-169 Mr-Apr '55. (MLBA 9:1)

1. Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya.

(Tartu--Spectrum analysis--Congresses)

POKROVSKI, A.G.

"The Influence of Third Elements on the Determination of "olma",  
Cobalt, Molybdenum, Nickel, Chromium, Manganese, Boron, Aluminum and Columbium  
in Heat-Resisting Steels" IZ Ak Nauk SSSR Ser Fiz No 5, Sep/Oct 1956  
U-1843

KOMAROVSKIY, A.G.

SOV/137-58-8-18130

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 275 (USSR)

AUTHOR: Komarovskiy, A.G.

TITLE: Local Spectroscopic Analysis (Lokal'nyy spektral'nyy analiz)

PERIODICAL: V sb.: Fiz.-khim. issled. austenitn. splavov. Moscow, Mashgiz, 1957, pp 184-198 (Tendy 1957-1958 84)

ABSTRACT: The spectroscopic analysis of welding seams of complex high-alloy steels and heat-resistant alloys was conducted with the aid of a universal generator which permitted ~~one to obtain~~ following systems: 1) High-frequency electric discharge; 2) powerful condenser spark discharge at a low voltage; 3) condenser discharge of an A-C arc; 4) ordinary arc discharge; 5) spark discharge. With the aim of stabilizing the work of the generator, 2 consecutively connected dischargers were introduced into the circuit. The local analysis was carried out under scheme 1. The current intensity in the primary winding of the transformer was 0.7 amp, the size of the gap in each discharger was 0.6 mm, the electrode gap was 1 mm,  $C=0.0123 \mu f$ ,  $L = 0.014$  millihenry, the shunting capacity  $C_2 = 100$  "pf" (!) Upon the switching off

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### Local Spectroscopic Analysis

of  $C_2$  the high-frequency discharge works through a 0.004 - 0.005-mm thickness of metal in one min. By increasing  $C_2$ , the thickness of the layer being worked through can be increased. The upper electrode is an electrolytic Cu rod, ground at the point into a truncated cone with a 1 - 1.5-mm diameter of the working surface. The spectra obtained with the aid of the high-frequency spark are distinguished by the sharpness of the lines and the absence of a background. The powerful condenser spark discharge at a low voltage occurs as the result of the discharging of a battery of condensers ( $C = 4000 \mu f$ ), which were first charged through a kenotron rectifier. To limit the wandering of the discharge over the surface of the specimen, the latter is covered with a thin insulating layer with an opening in it. Plastic clay, plastics (1 mm thick), mica, shellac, and lacquer (0.2 - 0.6 mm thick) were used as the insulating material. The enforced localization of the condenser discharge produces a sufficiently good reproducibility and a considerable increase in the intensity of the discharge.

1. Seam welds—Spectrographic analysis

M. N.

Card 2/2

*KOMAROVSKIY, A.G.*

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 299 (USSR)

AUTHOR: Komarovskiy, A.G.

TITLE: Rapid Spectrum Analysis of Austenitic Steels (Ekspressnyy metod spektral'nogo analiza austenitnykh staley)

PERIODICAL: V sb.: Fiz.-khim. issled. austenitn. splavov. Moscow, Mashgiz, 1957, pp 199-225

ABSTRACT: A system has been worked out for a rapid quantitative analysis of high-alloy steels and high-temperature-resistant alloys relative to their content of Si, Mn, Cr, Ni, Mo, W, Ti, V, Co, Al, B, and Nb. From the standpoint of convenience of arrangement and concentrational susceptibility the following analytical pairs proved best:

Si 2516 - Fe 2509  
Si 2507 - Fe 2499  
Mn 2933 - Fe 2937  
Mn 2933 - Fe 2921  
Cr 2677 - Fe 2644  
Cr 2862.6 - Fe 2874  
Cr 2677 - Fe 2685

Ni 2416 - Fe 2415  
Ni 3051 - Fe 3055  
Ni 3414.8 - Fe 3407  
Mo 2775 - Fe 2772  
Mo 2816 - Fe 2829  
W 2397 - Fe 2396.7  
W 2633 - Fe 2636

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137-58-2-4390

Rapid Spectrum Analysis of Austenitic Steels (Cont.)

Ti 3242 - Fe 3226  
Ti 3371 - Fe 3407  
Ti 3088 - Fe 3055  
V 3102 - Fe 3076  
V 3111 - Fe 3076  
V 2908.8 - Fe 2884

V 3185 - Fe 3180  
V 3111 - Fe 3091.6  
Co 2648.6 - Fe 2649.4  
Co 2648.6 - Fe 2636  
Co 3072 - Fe 3083.7  
Al 3082 - Fe 3055

B 2496.8 - Fe 2493  
Nb 3094 - Fe 3067  
Nb 3130.8 - Fe  
3167.9  
Nb 3094 - Fe  
3091.6  
Nb 3130.8 - Fe  
3091.6

Depending on the concentration of the various components, the analysis was made either with an arc (DG-1) or with a spark (IG-2). Optimum operating conditions for spark spectrometry were:  $I = 2$  amp;  $U = 220$  volts; one discharge per half-cycle;  $L = 0.01$  microhenry;  $C = 0.01 \mu f$ ; gap length of auxiliary discharger = 2.5-3 mm. Specimens were roasted for 10-60 seconds, depending on the element being tested for, and the exposure time was 40-60 seconds. In the arc test conditions were the following:  $I = 4.5$  amp (in the case of Al---in the case of B,  $I = 6$  amp);  $U = 220$  volts; discharger gap = 0.7-1.0 mm. The primary-circuit current in the transformer was 0.25-0.3 amp. Roasting lasted 10 seconds; the exposure time was 20 seconds. The spectrograph's slit width was 1.5 graduations (2.5 graduations when photographic Card 2/3

137-58-2-4390

**Rapid Spectrum Analysis of Austenitic Steels (Cont.)**

photometry was used). The effect of roasting in the case of the different elements was studied. A regularity was noted in the parallel shift of the calibration curves, which were plotted with reference to the binary-alloy calibration curves by photometric interpolation and photographic photometry for any steel or alloy systems. With respect to each element tested for, all the investigated steels and alloys were broken down into classes. Each class was analyzed with reference to one specific calibration curve. To determine a single element in a single specimen required 9 minutes in the arc test and 10 minutes in the spark test. To determine each successive element in the same specimen required one minute in the arc test, 1.5 minutes in the spark test.

M.N.

**1. Steel—Spectrum analysis**

Card 3/3

SOV/123-59-16-64548

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 16, p 127 (USSR)

AUTHOR: Komarovskiy, A.G.

TITLE: The Microspectral Method of Investigating the Composition of the Surface Layer of Metals

PERIODICAL: Novoye v tyazh. mashinostr., sb. 2, 1957, 29 - 30

ABSTRACT: A method is described to determine by microspectral analysis the chemical composition of very fine surface layers of metals (of a thickness of 0.005 - 0.006 mm). A universal generator was designed and manufactured (the electric circuit is given) which permits to obtain different conditions of electric discharge. The HF discharge of the generator was used by which it was possible to attain a depth of burnt out cavity of 0.005 - 0.006 mm. A rod of pure electrolytic copper of 8 - 9 mm in diameter, with a fine-pointed cone and an effective area of 1.2 mm in diameter, served as an upper dummy electrode. The sparking time of the specimen was 60 seconds. A microspectral analysis of fine surface layers of hot cracks, which formed in ingots of heatproof alloys on iron and nickel base

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SOV/123-59-16-64548

The Microspectral Method of Investigating the Composition of the Surface Layer of Metals

was carried out. Data are given on the effects of capacitance and self-induction on the sparking depth and the diameter of the spots originated on the investigated specimen; analytical pairs of spectral lines are given and the results of the microspectral analysis of the tested specimens.

E.A.I.

Card 2/2



YEREMIN, N.I., kand.fiz.-mat.nauk; YELCHIN, P.M., inzh.; KOMAROVSKIY,  
A.G., kand.tekhn.nauk; CHEBURKOVA, Ye.Ye., kand.tekhn.nauk;  
SHELEEV, B.A., kand.tekhn.nauk; ENTIN, S.D., kand.tekhn.nauk

Physical and chemical methods for the investigation in the  
phase analysis of alloys. [Trudy] TSNIITMASH 100:90-106  
'59. (MIRA 13:7)

(Alloys)

24(7)

SOV/48-23-9-37/57

AUTHOR: Komarovskiy, A. G.

TITLE: The Determination of Highly Concentrated Elements in Steels and Alloys by Means of the Spectroscopic Method

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 9, pp 1135 - 1136 (USSR)

ABSTRACT: In the spectroscopic determination of high-percentage fractions of the elements Mn, Si, Cr, Ni, Mo, W, Ti, V, Co, Nb, and Al in alloys a considerable influence by "third" elements is exercised, which manifests itself in form of a parallel shifting of the calibration curve or of a slight variation of the slope of the calibration curve in the transition from one steel- or alloy-system to another. In the present paper the causes of the influence exercised by "third" elements and the possibility of reducing or avoiding this effect are investigated. The results are summarized in form of three points:  
1) The use of powerful localized low-voltage pulse-spark discharges leads to a decrease of the parallel shift of the calibration curve. 2) The introduction of new coordinates for the calibration curve also leads to a decrease of the parallel

Card 1/2

The Détermination of Highly Concentrated Elements in  
Steels and Alloys by Means of the Spectroscopic Method

SOV/48-23-9-37/57

shift. 3) The material of the upper part of the lower electrode influences the spectrum intensity and the exactitude of the analysis considerably. If the line of the lower electrode is used as a line of reference, the influence exercised by the "third" elements is reduced or completely prevented. There are 4 figures.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (Central Scientific Research Institute for Technology and Machine Building)

Card 2/2

SOV/48-23-9-56/57

24(7)

AUTHOR: Komarovskiy, A. G.

TITLE: ~~The Spectrographic Investigation of the Composition of the~~  
Surface Layer in the Thermo-chemical Treatment of Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,  
Vol 23, Nr 9, pp 1169 - 1170 (USSR)

ABSTRACT: The present paper deals with the elaboration of a quantitative micro-spectroscopic analysis of thin surface layers, which were produced by thermodiffusion-saturation of austenitic refractory steels and alloys with chromium, aluminum, and other elements. Work was carried out by means of a quartz spectrograph of the type ISP-22, a high-frequency discharge being used for the production of the spectrum. The compositions of the standards used for the construction of the calibration curve are shown in table 1. Several details of the electrical arrangement are described; a copper rod of 6 mm diameter, which was sharpened to a point and the "working platform" of which had a diameter of 1 mm served as electrode. As an example figures 1 and 2 show the calibration curves for the determination of chromium and aluminum in thin diffusion

Card 1/2

The Spectrographic Investigation of the Composition of the Surface Layer in the Thermo-chemical Treatment of Alloys SOV/48-23-9-56/57

layers of the surface. The depth of the diffusion layers was determined by means of a metal microscope of the type MIM-6, and the dependence of the layer depths of the diffusion saturation on the diffusion temperature was investigated. The results obtained by investigations of the steels of the type EI405 and EI612, which are shown in table 2, show that an increase of the diffusion temperature from 1000 to 1050°C causes a considerable increase of the depth of the diffusion layer. Accordingly, also the chromium content in the diffusion layer increases. There are 2 figures, 2 tables, and 1 Soviet reference.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (Central Scientific Research Institute for Technology and Machine-building)

Card 2/2

SUKHENKO, K.A., kand. tekhn. nauk, red.; KOMAROVSKIY, A.G., kand.  
tekhn. nauk, retsenzent; BUMSHTEYN, S.I., red.; PUKHLIKOVA, N.A.,  
tekhn. red.

[Photoelectric methods of spectral analysis; collection of  
articles] Fotoelektricheskie metody spektral'nogo analiza;  
sbornik statei. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz,  
1961. 95 p. (MIRA 15:1)  
(Spectrum analysis)

S/048/62/026/007/016/030  
B104/B138

AUTHORS: Buyanov, N. V., Komarovskiy, A. G., and Sukhenko, K. A.

TITLE: Photoelectric methods of spectrum analysis and their industrial application

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 7, 1962, 902-906

TEXT: Spectral analysis in Soviet industry is carried out with photoelectric devices produced by the American firm ARL, the Italian firm Optico-Milano, and the British firm Hilger, and also with the Soviet quantometers ДФС-10 (DFS-10), ФЭС-1 (FES-1). Series production of the 10-channel ДФС-31 (DFS-31) is planned to start in 1962. The DFS-10 is compared with the ARL quantometer, and found to be less accurate. The following must be improved in the Soviet make: the amplifying and recording system, light source, and the stand; some of the photocells must be replaced by photomultipliers. In addition, the voltage and frequency must be stabilized. There are 1 figure and 4 tables.

Card 1/1

KOMAROVSKIY, A.K., gvardii podpolkovnik, voyennyy shturman pervogo klassa;  
KAPUSTIN, I.I., gvardii mayor, voyennyy shturman pervogo klassa

The keeping of a flight attitude by an airplane unit. Mor. sber.  
48 no.6:53-56 Ja '65. (MIRA 18:6)

Structure and physical properties of the  
ice cover of the (fresh) waters, Moscow, 1952

PHASE I BOOK EXPLOITATION

777

Komarovskiy, A.N., Doctor of Technical Sciences, Professor

Zashchitnyye obolochki yadernykh reaktorov (Nuclear Reactor Containment Vessels)  
Moscow, Atomizdat, 1958. 66 p. 5,650 copies printed.

Ed.: Labaznov, V.I.; Tech. Ed.: Mazel', Ye.I.

**PURPOSE:** This booklet is intended for scientists and engineers designing and constructing nuclear reactors.

**COVERAGE:** The booklet deals with the basic aspects of the design and construction of containment vessels for nuclear reactors. Various types of containment shells, materials used in their construction, and the forces and stresses in containment shells are discussed. The booklet contains several schematic drawings of various types of reactor containment shells built in the U.S.A. and other foreign countries. No mathematical formulas are given. There are 49 references; 10 Soviet, 37 English, 1 French, and 1 German.

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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000824110012-2

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Types of Containment Shells	11
Diagrams of Relative Arrangement of a Containment Shell and Biological Shielding	30
Arrangement of the Reactor and Auxiliary Radioactive Equipment With Respect to the Containment Shell	34
Sizes of Containment shells	34
Forces Acting on a Containment Shell	35
Design, Allowable, and Acting Stresses in a Containment Shell	37
Codes and Technical Specifications for the Design of Containment Shells	37
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21(1)

PHASE I BOOK EXPLOITATION SOV/2265

Komarovskiy, Aleksandr Nikolayevich, Doctor of Technical Sciences,  
Professor

Stroitel'nyye konstruktsii uskoriteley (Structural Designs of  
Accelerators) Moscow, Atomizdat, 1958. 108 p. 5,400 copies  
printed.

Ed.: A.F. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: The book is intended for engineers designing acceler-  
ators and for advanced students of higher schools studying  
accelerator construction.

COVERAGE: The author states that the accelerator of charged  
particles is one of the most effective instruments in modern  
nuclear physics. The enormous importance of the results ob-  
tained with them serves as a stimulus to wider construction  
of accelerator units in scientific research institutes, lab-  
oratories and schools in the USSR and abroad. The lack of  
literature on planning the construction of these complex in-

Card 1/4

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000824110012-2

Structural Designs of Accelerators

installations prompted the author to collect, systematize and  
analyze the diverse writings on the subject. The relatively  
limited experience in designing and constructing accelerators  
and the limited number of operating installations make stand-  
ardization of structural elements premature. The author attem-  
pts to systematize and describe most of the accelerators now  
operating as well as those still under construction or in the  
planning stage. There are 21 references: 2 Soviet, 16 English,  
2 French, and 1 German.

TABLE OF CONTENTS:

From the Author	3
Choice of Site for Accelerators	5
Basic Conditions for Designing the Buildings to House Acceler- ators	6

Card 2/4

21(3)

PHASE I BOOK EXPLOITATION SOV/1986

Komarovskiy, Aleksandr Nikolayevich, Doctor of Technical Sciences, Professor

- Stroitel'nyye materialy dlya zashchity ot izlucheniya yadernykh reaktorov i uskoriteley (Building Materials for Radiation Shielding in Nuclear Reactor and Accelerator Installations) Moscow, Atomizdat, 1958. 123 p. 6,000 copies printed.

Ed.: A.F. Alyab'yev; Tech. Ed.: Ye.I. Mazel'.

**PURPOSE:** This book is intended for engineers engaged in designing structures for nuclear plants and those concerned with radiation-shielding.

**COVERAGE:** The book considers shielding and engineering properties of building materials used for radiation shielding of nuclear reactors and accelerators. Particular attention is given to special heavy-aggregate and hydrated concretes. In the case of ordinary concretes, consideration is limited to their shielding properties and to the conditions required for maximum density and homogeneity. The book compiles, systematizes, and, as far as possible, generalizes the results of Soviet and foreign investigations and construction practices in the radiation shielding of nuclear reactors. There are six appendixes giving data on costs

Card 1/6

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000824110012-2

Building Materials for Radiation (Cont.)

SOV/1986

and applications of concrete to buildings and shielding associated with various types of nuclear reactors and accelerators. There are 56 references, 14 of which are Soviet, 39 English, and 3 German.

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#### GENERAL PROBLEMS

Character and Magnitude of Radiation of Nuclear Reactions and Accelerators	3
Units of Measurement of Radioactive Radiations and the Shielding Properties of materials	5
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#### SHIELDING PROPERTIES OF BUILDING MATERIALS

Ordinary Concrete  
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Preparation and Pouring of Special Heavy-aggregate Concretes in Winter		102
Estimation of Economic Factors in the Use of Special Heavy-aggregate Concretes for Radiation Shielding of Nuclear Reactors and Accelerators		103
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II. Data on boron and boron containing materials		110
Card 5/6		

21(9)

PHASE I BOOK EXPLOITATION SOV/1652

Komarovskiy, Aleksandr Nikolayevich, Doctor of Technical Sciences, Professor

Stroitel'nyye konstruktsii yadernykh reaktorov (Structural Designs of Nuclear Reactor Plants) Moscow, Atomizdat, 1958. 160 p. 5,600 copies printed.

Ed.: G.M. Pchelintseva; Tech. Ed.: Ye. I. Mazel'

**PURPOSE:** This is a manual for designers of the structural portion of nuclear reactor plants and is approved by the USSR Ministry of Higher Education as a textbook for students studying the technology of nuclear reactor construction at structural engineering vuzes.

**COVERAGE:** An attempt is made to systematize and summarize the results of experience with designing the structural portion of various types of nuclear reactors in the USSR and abroad. Site selection for nuclear plants, reactor shielding

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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000824110012-2"

Structural Designs (Cont.)

SOV/1652

and basic conditions for planning reactor buildings are described. In describing the structural portion of nuclear plants the author attempts to evaluate some of the most successful design solutions and to present general principles proved by experience. In the chapters devoted to the nuclear reactor buildings are described the basic conditions for planning and structural designing of those parts of reactor buildings subject to special requirements connected with the protection of personnel or of the surrounding are against radiation, and also with conditions of decontamination. A large section of the book is devoted to illustrations of Soviet and non-Soviet nuclear reactors. No personalities are mentioned. There are 135 references of which 32 are Soviet, 97 English, 4 German, and 2 French.

#### TABLE OF CONTENTS:

From the Author	2
Ch. I. Selecting the Site for Nuclear Reactors	3
Ch. II. Location of Reactors Relative to Ground Surface	4

Card 2/5

KOMAROVSKIY, A.M., prof., doktor tekhn. nauk; VERIGO, G.S., inzh., nauchnyy  
red.; YUDINA, L.A., red. izd-va; TOKER, A.M., tekhn. red.

[Organisation of construction of Moscow University] Organizatsiya  
rabot na stroitel'stve Moskovskogo gosudarstvennogo universiteta  
imeni M.V. Lomonosova, Moskva, Gos. izd-vo lit-ry po stroit.,  
arkhit. i stroit. materialam, 1958. 327 p. (MIRA 11:10)  
(Moscow University) (Building)

SOV/97-58-9-8/13

AUTHOR: Komarovskiy, A.N., Doctor of Technical Sciences, Professor

TITLE: Concrete with Increased Water Content Used for Protection Against Radiation from Nuclear Reactors (Beton s povyshennym soderzhaniyem vody dlya zashchity ot izlucheniya yadernykh reaktorov)

PERIODICAL: Beton i Zhelezobeton, 1958, Nr 9, pp 349 - 351 (USSR)

ABSTRACT: The basic requirements of this type of concrete is to absorb or weaken the radiation of gamma rays and also the absorption or retardation of the flow of neutrons. The flow of neutrons is reduced as a result of the collision of neutrons with atoms of light substances and partly by collision with hydrogen atoms. Concrete, to a large extent, has the property of reducing the radiation of both gamma and neutron rays as it contains heavy elements including hydrogen. To increase the protective properties of concrete against neutron radiation, special types of aggregates are required with increased content of bound water. Recently, concretes have been used made from limonite and hydrogoethite iron ores. The chemical composition of some limonite ore has been determined by A. Ye. Desov. Limonite ore should contain minimum 70% of  $\text{Fe}_2\text{O}_3$  in the case of concrete with coarse aggregate

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SOV/97-58-9-8/13

Concrete with Increased Water Content Used for Protection Against  
Radiation from Nuclear Reactors

and at least 60% in the case of fine-aggregate which should contain at least 10% bound water. Mix with limonite sand has viscosity 12 - 15 times higher than mix prepared from quartz sand. During mixing and casting of this concrete mix, containing coarse aggregate in the form of scrap iron, a more even distribution of the aggregate is ensured including separation of the mix. Tests carried out by TsNIPS with limonite concrete, subjected to compression after twenty-eight days, gave a value of  $193 \text{ kg/cm}^2$ . The composition of the concrete was as follows (in  $\text{kg/m}^3$ ): cement 325, limonite aggregate 1 205, limonite sand 910, water 260. Tests carried out by H.I. Davis show strength of limonite concrete in compression after 3 months to be  $406 \text{ kg/cm}^2$ . Frequent use was made of a concrete based on hydrogoethic aggregate for protection of installations of the reactor in the atomic power station of the Ac.Sc.USSR. This aggregate was used to increase the quantity of bound water in concrete to give higher protection from neutron radiation. Hydrogoethic concrete has the following composition (in  $\text{kg/m}^3$ ):

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SOV/97-58-9-8/13

Concrete with Increased Water Content Used for Protection Against Radiation from Nuclear Reactors

cement Mark 300-400: 552, fine aggregate 410, coarse aggregate 1 520, water 266. Protective properties of ordinary and limonite concrete were investigated in the Institut atomnoy energii AN SSSR (Institute for Atomic Energy of the Ac.Sc.USSR) by V.S. Dikarev (Ref 5). Apart from limonite aggregate for concrete with increased content of bound water, the following minerals are also used: glauconite, serpentine and fine amorphous silica. In one case, concrete based on calcined slate with 20% water content was used for protective concrete. Tests proved that concrete with increased content of water is not more effective in comparison with ordinary concrete (Ref 1). The use of barium oxide is not suitable. Investigations carried out by Price, Horton and Spinnie (Ref 8) showed that sufficient effective protection from neutronic flow requires not more than 0.5% hydrogen to be present in the concrete. P.P. Budnikov advocates the addition of 25 - 30%  $\text{CaSO}_4$  to Portland cement. Various

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Concrete with Increased Water Content Used for Protection Against  
Radiation from Nuclear Reactors

SOV/97-58-9-8/13

investigations carried out by English and American  
scientists working on the same lines are discussed and  
compared.

There are 1 table and 13 references, 8 of which are  
English and 5 Soviet.

Card 4/4

AUTHOR: Komarovskiy, A. N. 09-4-5-4/26

TITLE: Criticism of the Economic Expediency of Using Special Heavy Concrete as a Radiation Shield (Otsenka ekonomicheskoy tselosobraznosti primeneniya spetsial'nykh tyazhelykh betonov dlya zashchity ot izlucheniya)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 5, PP 437 - 442 (USSR)

ABSTRACT: By means of non-Russian **data**, **this** problem is investigated: whether there is any economic justification for the use of special heavy concrete as a radiation shield for nuclear reactors and accelerators. For the specific Russian conditions also economic computations are made which **allow us to** draw the following conclusions:

- 1) There is no economic advantage in using special heavy concretes instead of normal concrete as a radiation shield for circular accelerators.
- 2) By the use of heavy concrete for large linear accelerators, the costs of construction are increased by 15 to 20%; if barytic concrete is used, up to 60%; and if concrete with

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09-4-5-4/26

. Criticism of the Economic Expediency of Using Special Heavy Concrete as a Radiation Shield

metallic additions is used, up to 72%.

3) Exceptions can perhaps be justified in the following cases:

a) The reactor or accelerator is placed in a small room only and space is needed for the installation of experimental devices.

b) If the collimator length must be very much shortened for reasons of intensity.

There are 5 tables and 8 references, 1 of which is Soviet.

SUBMITTED: December 14, 1957

AVAILABLE: Library of Congress

1. Radiation--Shielding 2. Concrete--Applications 3. Reactors  
--Shielding 4. Accelerators--Shielding

Card 2/2

AUTHOR: Komarovskiy, A. N.

SOV/89-5-2-3/36

TITLE: Heating of the Structures Surrounding a Nuclear Reactor  
(Nagrevaniye konstruktsiy, okruzhayushchikh yadernyy reaktor)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 2, pp. 119-123 (USSR)

ABSTRACT: A report is given on the influence exercised by the heating and the radioactive radiation of a reactor on the concrete of the biological shield. Experimental data on experiments carried out in England and the USA in this direction are given. The results concerning the mechanical properties and the moisture content of the concrete are especially discussed.  
For the purpose of decreasing the load of the concrete a thermal shield consisting of iron having a thickness of 10-15 cm is being used more and more. Recently, additions like boric acid etc. are used so as to be able to capture a certain number of neutrons in it.  
According to investigations carried out by the Central Institute AS USSR, an addition of 4.5% (of the weight of the water) of boric acid leads to a noticeable slowing-down of the hardening of the concrete. Therefore this addition cannot be used for

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Heating of the Constructions Surrounding a  
Nuclear Reactor

SOV/89-5-2-3/36

protective shields which must be of exceptional strength. Good results were obtained by using a metal shield of 100 mm thickness, into the interior of which paraffin and boron carbide was introduced. By means of this shield it was possible to decrease the strength of the concrete of the biological shield to 1,8 m. For the purpose of increasing thermal stability it apparently seems to be a useful method to cover the inner layers of the protective shield with ceramic plates, but also glass wool on a kaolin basis in a compressed state may be used with good success. There are 1 table and 10 references, 2 of which are Soviet.

SUBMITTED: April 2, 1958

Card 2/2

~~KOMAROVSKIY, A.N.~~, doktor tekhn. nauk.

Characteristics of building shields for nuclear reactors and  
accelerators using special heavy concretes. Stroi. prom. 36 no.2:  
2-9 V '58. (MIRA 11:2)

(Shielding (Radiation)) (Concrete construction)

KOMAROVSKIY, Aleksandr Nikolayevich; prof., doktor. tekhn. nauk; TISTROVA,  
O.N., red.; LARIONOV, G.Ye., tekhn. red.

[Initial stages of building on large construction sites] Pod-  
gotovitel'nye raboty na krupnykh stroitel'stvakh, Moskva, Gos.  
energ. izd-vo, 1959. 406 p. (MIRA 12:8)  
(Construction industry)

21(9)

AUTHOR:

Komarovskiy, A. N.

SOV/89-7-3-1/29

TITLE:

Ways Leading to Steel Economy in Reactor Construction

PERIODICAL:

Atomnaya energiya, 1959, Vol 7, Nr 3, pp 205-214 (USSR)

ABSTRACT:

By analysis of reactor stations the author arrives at the conclusion that saving of steel in reactor construction is possible only by replacing steel constructions by suitable concrete constructions. The following is dealt with in detail: 1) Reactor boiler: It is shown that the use of reinforced-concrete boilers is absolutely within the range of possibility. In this case, however, the reactor type plays an important part. In the case of a pressure pipe reactor with graphite moderator, for instance, much steel may be saved. It is, however, of importance that in this case the inner layer of concrete (thickness ~50 cm) is made of fireproof concrete. If, additionally, the inside of this concrete is sealed by a thin layer of steel foil, all problems will probably be solved. The suggestion of the Academician Bekhine of the Czechoslovak Academy of Sciences to use a reinforced concrete reactor boiler for the first Czechoslovak Atomic Power Plant A-1 will not.

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Ways Leading to Steel Economy in Reactor Construction

be realized as too few experiments with such constructions within the direct reactor radiation field have hitherto been made. 2) Thermal shield. Heating of the shield and the herewith connected stressing of a concrete shield might be met by cooling one part of the shield and providing that part, which is subjected to particularly great stress, with especially strong armoring. The thin cracks forming in the concrete do not mean an essential deterioration of the shielding properties of the concrete, nor is a noticeable deterioration of the strength of the concrete under the influence of neutron irradiation (up to  $10^{12}$  n/cm<sup>2</sup>.sec) observed. 3) Containment. It is shown on the basis of the example of the Soviet 300 Mw boiling water reactor in what way the biological protective sheathing may at the same time serve as a protection against a possible explosion (3.5 at excess pressure) by means of the use of armored concrete. If the same reactor were built into a metal sphere (2 at excess pressure - as the volume would be greater), 2.5 times more iron would be needed, which would, besides, have to be of higher quality. As, up to now, also in the USSR sufficiently accurate methods have not been worked out for calculating the thermal stress in the biological shield - its order of magnitude is de-

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SOV/89-7-3-1/29

Ways Leading to Steel Economy in Reactor Construction

terminated by the armoring - many experiments will still have to be carried out in order to solve this problem. There are 6 figures, 3 tables, and 17 references, 6 of which are Soviet.

SUBMITTED: April 4, 1959

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80523

S/097/60/000/05/06/016

15.3200

AUTHOR: Komarovskiy, A.N., Doctor of Technical Sciences, Professor  
~~XXXXXXXXXXXXXXXXXXXX~~  
TITLE: Temperature Resistance of Ordinary, Special, Heavy and Hydrate  
Concretes  
PERIODICAL: Beton i Zhelezo-Beton, 1960, No. 5, pp. 215 - 220

TEXT: Referring to tests conducted in the Atomic Center of Henford, USA, and in Munich, Germany, the author draws certain conclusions as to the specific heat capacity and heat conductivity of various kinds of concrete and value of coefficients of linear heat expansion. The Soviet Designing Institute has tested various types of concrete at temperatures from 100-300°C during 5-6 hours. Results of these tests in reference to magnetite concrete and concrete made with scrap steel revealed that the most resistant concretes were those made from Portland cement. In accordance with investigations conducted by TsNIPS 250°C should not be exceeded in the case of ordinary concrete, while in regard to barytic and limonite concretes heating should be limited to 200°C. The author cites the experiments conducted in the USA, France and Britain. These results corroborate with those of the author and the above-named Designing Institute, but are in contradiction with

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8/097/60/000/05/06/016

Temperature Resistance of Ordinary, Special, Heavy and Hydrate Concretes

the indications issued by the Institute of Concrete and Reinforced Concrete of the ASiA (Academy of Construction and Architecture) of the USSR, to the effect that when heated to 200°C ordinary limonite concrete loses 40% of its resistance, concrete with scrap iron and ordinary sand 11%, and concrete with limonite sand and scrap iron 85%. The indications of the Institute of the ASiA conclude that the utilization of barytic and limonite concretes at temperatures exceeding 500°C is prohibitive without special heat protection. - The author describes the effect of heating concrete which results in evaporation of water in concrete, which in turn impairs the protective properties of concrete (primarily in atomic reactors). Referring to the investigations of Davis (USA) [Ref. 5] the article gives the percentages of loss of water incurred by various kinds of concrete on being heated up to 900°C which percentages vary from 2-10%. These findings correspond in general with the values ascertained in regard to loss of weight by TsNIPS whose tests consisted in exposing various kinds of concrete to a temperature of 100°C for a duration of 1 week. Results are also given of similar experiments conducted in the Designing Institute and abroad. Kravchenko proved that the longer the time

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S/097/60/000/05/06/016

Temperature Resistance of Ordinary, Special, Heavy and Hydrate Concretes

allowed for setting of concrete, the greater is the amount of water retained in concrete when being heated. There are 3 tables, 6 graphs and 15 references: 4 Soviet, 8 English, 2 German and 1 French. *4*

Card 3/3

21.1920

S/089/60/008/06/02/021  
B006/B063 82303

AUTHOR:

Komarovskiy, A. N.

TITLE:

New Developments in Design and Layout of Nuclear Reactors

PERIODICAL:

Atomnaya energiya, 1960, Vol. 8, No. 6, pp. 505-513

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TEXT: The present paper deals with the design and layout of power reactors with special regard to the safety factor. The advantages and disadvantages of underground and overground reactors are discussed and various details (especially of non-Soviet reactors) are considered in this connection. The author first discusses some details of underground reactors with reference to the Pervaya atomnaya elektrostantsiya (First Atomic Power Plant) of the USSR. The advantages and disadvantages of underground reactors are illustrated by the reactors R-1, R-3, "Adam", and "Eva" (Fig. 1), and details of Swedish reactors are given. In the following, the author describes the shielding system of several American reactors and the biological shield of a Russian experimental power reactor, which consists of reinforced-concrete blocks

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✓

New Developments in Design and Layout  
of Nuclear Reactors.

S/089/60/008/06/02/021  
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(5.4 x 2.4 x 1.5 m). Fig. 5 shows a cross-sectional view of the reactor shaft and the concrete blocks. A single block weighs 46.5 metric tons. Today, assemblies of superposed units of Monolith and reinforced concrete are used extensively in the USSR (Fig. 6). The shield assemblies used in research power reactors and in the atomic power plant of Novo-Voronezh are usually made up of standardized units of reinforced concrete. In the following, the author discusses the use of concretes of different composition. Fig. 7 illustrates the weight and costs of various shield concretes. It may be seen that the use of ordinary concrete is most profitable. Moreover, the author discusses the usefulness of limonite concrete for purposes of protection. The results of investigations of Russian planning institutes are given, and it is shown that the increase in costs of reactor shielding systems, arising from the use of limonite concrete, differs largely in the various regions of the USSR. It ranges from 12 (Central regions) to 132 per cent (East Siberia). It is noted that the use of compressed dry iron ores is profitable for the horizontal biological shield. The proton synchrotron of the OIYaI (Joint Institute of Nuclear Research) at Dubna has such a shield which

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New Developments in Design and Layout  
of Nuclear Reactors

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is made of dry compressed magnetite ores from Krivoy Rog ( $2.62 \text{ t/m}^3$ ) and covers an area of  $500 \text{ m}^3$  (0.9 m thick). Ore costs only half as much as a shield of heavy concrete blocks. Finally, the author refers to investigations carried out in the USA on the use of shielding shells, and discusses their advantages and disadvantages. Many reactors can do without them, such as the Beloyarsk Atomic Power Plant imeni Kurchatov, the Voronezh Atomic Power Plant, etc. Among other things, it is said that shielding shells sometimes increase explosion hazard in reactors. The shielding shell of the American APPR-1 reactor (Fig. 8) is also described in detail. There are 8 figures and 14 references: 3 Soviet and 8 US.

SUBMITTED: January 28, 1960 .



Card 3/3

KOMAROVSKIY, A.N., doktor tekhn.nauk, prof.

Using prestressed reinforced concrete in building nuclear  
reactors. Prom.stroi. 38 no.2:34-38 '60. (MIRA 13:5)  
(Nuclear reactors) (Prestressed concrete)

L 25611-65 EPA(w)-2/EWT(m)/EWI(m)-2 Pt-10/Pa-10 IJP(c)  
 ACCESSION NR: AT5003929 S/3065/61/000/035/0003/0015

AUTHOR: Komarovskiy, A. N. (Doctor of technical sciences, Professor)

TITLE: Structure designs and construction of new accelerators 19

SOURCE: Moscow. Inzhenerno-stroitel'nyy institut. Sbornik trudo, no. 36, 1961.  
 Kafedra stroitel'stva yadernykh ustanovok (Department for the construction of  
 nuclear engineering installations), 3-15

TOPIC TAGS: synchrotron, reinforced concrete, cantilever structure, beam  
 deflection, electromagnet, proton synchrotron

ABSTRACT: A brief survey is given of existing, recent nuclear particle accelerator  
 structures and their design details are outlined. As examples of accelerators with  
 depressed circular electromagnet rooms, the following are listed: the Brookhaven  
 (USA) 30-Bev synchrotron, the 7-Bev synchrophasotron of the Nuclear Institute in  
 Great Britain, the 7-Bev proton synchrotron in Iutherford, USA, and the 12.5-Bev  
 proton synchrotron at the Argonne National Laboratories (USA). Three high-energy  
 accelerators are listed with complex foundations in the form of separate supports  
 leading to the bedrock. These supports are spanned with rigid bridges (beams) on

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which the main plant is constructed. These accelerators are: the Argonne National Laboratory 12,5-Bev proton synchrotron, the 30-Bev linear accelerator of Vickers (USA) [?], and the 25-Bev Cern synchrotron. Five different design specifications are listed for the construction of support beams under the new 50-60-Bev Serpukhov (USSR) synchrophasotron. The least costly among these is found to be prestressed, reinforced concrete beams with metallic platforms, and the most economical structure, cantilever beams, each weighing 11 tons (see Fig. 1 on the Enclosure. Orig. art. has: 14 figures and 1 table.

ASSOCIATION: Moscow. Inzhenerno-stroitel'nyy institut (Moscow Engineering Construction Institute)

SUBMITTED: 00

ENCL: 00

SUB CODE: NP, MT

NO REF SOV: 000

OTHER: 005

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L 25611-64  
ACCESSION NR: AT5003929

ENCLOSURE: 01

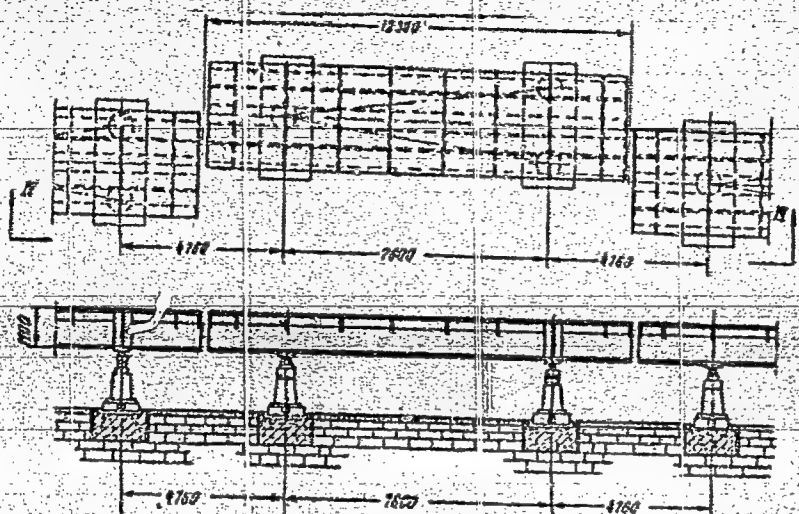


Fig. 1.

Cord .3/3

KOMAROVSKIY, A.N., doktor tekhn. nauk, prof.; SHAROVA, Ye.A., red.;  
YEZHOVA, L.L., tekhn. red.

[Structural design of accelerators] Stroitel'nye konstruktsii  
uskoritelei. Izd.2., perer. Moskva, Gos. izd-vo "Vysshaya  
shkola," 1961. 133 p. (MIRA 15:3)  
(Particle accelerators)

LAGUN, I.I.; NEKRASOV, K.S.; GORELIK, S.G.; KOMAROVSKIY, A.N., doktor tekhn. nauk, prof., nauchnyy red.; YUDINA, L.A., red. izd-va; SHERSTNEVA, N.V., tekhn. red.

[Vibrated brick panels in housing construction] Vibrokirpichnye paneli v zhilishchnom stroitel'stve. Moskva, Gos. izd-vo lit-ry po stroit., arkhitekt. i stroit. materialam, 1961. 138 p. (MIRA 14:6)  
(Brick houses)

BR

PHASE I BOOK EXPLOITATION SOV/5859

Komarovskiy, Aleksandr Nikolayevich, Doctor of Technical Sciences, Professor

Stroitel'stvo yadernykh ustanovok (Construction of Nuclear Plants) Moscow,  
Gosenergoizdat, 1961. 335 p. 5500 copies printed.

Ed.: Yu. I. Koryakin; Ed. of Publishing House: L. N. Toropov; Tech. Ed.:  
N. I. Borunov.

PURPOSE: This book is intended for engineers concerned with designing,  
building, and assembling nuclear plants.

COVERAGE: Problems concerning the construction of nuclear reactors, particle  
accelerators, radiochemical laboratories, and structures for protection  
against radioactive radiation are discussed. Numerous detailed illustrations  
are given. No personalities are mentioned. References accompany each part.

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23739

CIA-RDP86-00513R000824110012-2  
B136/B201

21.1310

AUTHOR: Komarovskiy, A. N.

TITLE: Protective linings of structures in radioactive installations

PERIODICAL: Atomnaya energiya, v. 10, no. 6, 1961, 597-605

TEXT: Protective linings of buildings exposed to radiation hazards have  
the purpose of preventing radioactive liquids from penetrating into  
buildings, of sealing off the biological shield, and of facilitating the  
deactivation of surfaces and the removal of radioactive dust. The material  
concerned should exhibit the following properties: resistivity to radia-  
tion, to corrosion by liquids or gases, and to heating. The secondary  
radiation induced by neutron bombardment should be weak; moreover, the  
material should be easy to clean, and should have a sufficient mechanical  
strength. Stainless steel from 2 to 3 mm thick is utilized for lining  
floors and walls, as well as ducts containing tubings for the conveyance  
of radioactive and aggressive liquids. The interior of rooms, where

liquids having a radioactivity  $> 5 \cdot 10^4$  gram-equivalent/cm<sup>3</sup> and being  
subjected to pressures  $> 2$  atm. are handled are likewise lined with stain-

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S/089/61/010/006/004/011  
B136/B201

## Protective linings of structures ...

less steel or also with 57-40 plastic foils. Steel is also used for ventilation systems and for the interior lining of reinforced concrete pipes, which then serve the sole purpose of receiving the pressure. Since, as a consequence of neutron absorption, iron emits gamma radiation of 7.6 Mev, it cannot be utilized for the interior lining of the biological shield. 57-40 plastics are recommended instead, also because the deactivation of the shield is facilitated thereby. Formerly, also ferrous metals were utilized for this purpose, e. g., in the Voronezh and Beloyarsk atomic power stations, where the reactor room, the generator room, and others were lined with 3-4 mm thick iron sheet. Also PVC- and special enamel varnish are used in installations with low radioactivity. In plants, where radioactive and aggressive media are handled at temperatures up to 400°C, 1X18H9T (1Kh18N9T) steel is used, while X18H12M2T (Kh18N12M2T) and X18H12M3T (Kh18N12M3T) steels are used in case of a higher aggressive power and temperatures over 400°C. Laminated plates of stainless 1Kh18N9T steel on CT.-3 (St.-3) or CT.-10 (St.-10) carbon steel are also utilized. The welding of stainless steel is controlled by the Gosgortekhnadzor. The plastic material 57-40, whose properties and stability against aggressive media are indicated, is

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Protective linings of structures ...

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either welded with h-f or in the heated air jet. So far, no generally applicable procedure has been developed for gluing this material, excepting adhesive 88 which, however, is for use on weakly irradiated sites only. On the other hand, very thin plastic foils with adhesive surface are also used. The mechanical fastening of plates and foils by pegs and peg-runner has been successfully introduced in 1960. The fastening of plastic bands reeled off from rolls is also described in greater detail. Lacquer- and enamel varnish coatings are used for structures in which a temperature of 60°C is not exceeded and in which radioactivity is low. An attempt has also been made to use pyroxylin lacquers. The American firm Shell Chemical has developed a synthetic resin coating used a priming. There are 4 figures, 1 table, and 2 references: 1 Soviet-bloc and 1 non Soviet-bloc. The reference to the English-language publication reads as follows: Nucleonics, 18, No. 2, 112 (1960).

SUBMITTED: February 18, 1961

Card 3/3

Glenn T. Tamm, A.M., prof., doctor techn. natk

Mechanized assembly of atomic reactors. Makh. stroi. 18 no. 8:9-  
14 P '61. (M.A. 14:8)

(Nuclear reactors)

KOMAROVSKIY, A.N.; KURIYSHEV, V.S.; LAVROV, A.V.; PAVLOV, P.I.;  
SHIRYAYEV, F.Z.

The buildings, foundations and protective installations  
of an accelerator with rigid focusing for an energy of  
7.0 Gev. Prom. stroi. 41 no.2:31-34 F '63. (MIRA 16:3)  
(Particle accelerators--Design and construction)

KOMAROVSKIY, Aleksandr Nikolayevich, doktor tekhn. nauk, prof.;  
GRIGOR'YEV, S.T., red.; KOKOR N, L.D., red.

[Panel and large-block construction of industrial buildings  
and power plants] Panel'noe i krupnoblochnoe stroitel'stvo  
promyshlennykh i energeticheskikh ob"ektov. Moskva, Ener-  
giia, 1965. 439 p. (MIRA 18:3)

KOMAROVSKIY, A.N., general-leytenant inzhenerno-tekhnicheskoy sluzhby

To new successes in the work of military builders. Koman. Vooruzh.  
S11 46 no.10:19-24 Ny '65. (MIRA 18:6)

KOMAROVSKIY, Aleksandr Nikolayevich, doktor tekhn. nauk, prof.;  
MEL'NIKOVA, A.I., red.

[Construction of nuclear reactors] Stroitel'stvo iadernykh  
ustanovok. Izd.2., dop. i perer. Moskva, Atomizdat, 1965.  
382 p. (MIRA 18:12)

L 26151-66 JT/JKT

ACC NR: AN6014205

(A,N)

SOURCE CODE: UR/9008/66/000/014/0002/0003

AUTHOR: Komarovskiy, A. N. (Colonel general of technical engineering corps, Deputy Minister of Defense for Construction and Quartering of Troops)

ORG: none

TITLE: Economic reform and military construction projects

SOURCE: Krasnaya zvezda, 18 Jan 66, p. 2, col. 4-7, and p. 3, col. 1-4

TOPIC TAGS: construction, military personnel

ABSTRACT: In an interview, Colonel General Komarovskiy commented on (1) changes in the activities of the Ministry of Defense construction industry in connection with the decisions of the September Plenum of the CC, CPSU; (2) the extension of a new system of planning, financing and material incentives to military construction projects; (3) the instruction of military construction cadres in the principles of economics; (4) the performance of the military construction industry in 1965 and its plans for 1966.

SUB CODE: 15/

SUBM DATE: 00/

ORIG REF: 000/

OTH REF: 000

Card 1/1 CC

ACC NR: AM6012206

Monograph

UR/

Komarovskiy, Aleksandr Nikolayevich (Doctor of Technical Sciences, Professor)

Construction of nuclear power plants (Stroitel'stvo yadernykh ustanovok) 2d ed., rev. and enl. Moscow, Atomizdat, 1965. 382 p. illus., biblio. 1800 copies printed. Textbook for students at construction institutes and faculties.

TOPIC TAGS: nuclear power plant, nuclear reactor design, nuclear reactor construction, radiation shielding, containment vessel, reactor siding, radioactive waste disposal

PURPOSE AND COVERAGE: The problems of designing and construction of nuclear power installations are discussed. This is a new, revised edition of "Nuclear Installation Construction," published in 1961. A bibliography is provided for each chapter. It is a textbook for students in the construction, engineering, and physics faculties at advanced technical schools as well as a reference book for designers and builders of nuclear installations.

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UDC: 621.039.53

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- Ch. 27. Containment materials and construction -- 271

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Card 4/4

BUYANOV, N.V.; KOMAROVSKIY, A.<sup>S.</sup>~~E.~~; SUKHENKO, K.A.

Photoelectric methods of spectrum analysis and their use in  
industry. Izv. AN SSSR. Ser. fiz. 26 no.7:902-906 J1 '62.  
(MIRA 15:8)  
(Spectrum analysis--Industrial applications)

KOMAROVSKIY, I.I.

5778. Naplavka iznoshennykh vysokomercantsovistykh krestovin. M., Transzh-L'horizdet, 1954, 18s ill. 22sm (Vsesoyuz. nauch.-issled. in-t. transporta. inform. P. S'mo. no. 318.) 1500 ekz Bespl. na obl. avt. ne ukazany.-(54-15303zh) 625.151;621.791.92+621.791.92

SO: Knizhnaya, Letopis, Vol. 1, 1955

OBUKHOV, A.V.; KHRYASHCHEVA, N.K.; KOMAROVSKIY, I.I.; VERINA, G.P., tekhnicheskii redakter.

[Welding and building up railroad rails] Svarka i naplavka shelesnodorozhnykh rel'sov. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut shelesnodorozhnogo transporta. Trudy no.110) 1955 219 p.  
(Railroads--Rails--Welding)

KOMAROVSKIY, I.V., inzh.

Two books for prospectors. Bezop.truda v prom. 7 no.2:35-36 F '63.  
(MIRA 16:2)  
(Geological surveys)

MALYARENKO, A.V.; KOMAROVSKY, I.Ye.; KUFERSHTEYN, Ye.S.

Use of the MCh-52 lacquer in the Malino factory of bent furniture. Bum. 1 der. prom. no.3:38-40 JI-S '65. (MIRA 18:9)

KOMAROVSKIY, L.V. (Tomsk)

Three-dimensional gas flows with a degenerate hodograph.  
Prikl.mat.i mekh. 24 no.3:491-495 My-Je'60. (MIRA 13:10)  
(Aerodynamics)

84657

S/020/60/135/001/008/030  
B006/B056

11.7430

AUTHOR:

Komarovskiy, L. V.

TITLE:

An Exact Solution of the Equations of a Spatial Non-stabilized Gas Flow of the Double-wave Type

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 135, No.1, pp. 33-35

TEXT: The author deals with the solution of the system of equations (1):

$$\frac{\partial u_j}{\partial x_4} + u_k \frac{\partial u_j}{\partial x_k} + \frac{\partial u_4}{\partial x_j} = 0, \quad (u_4 = \frac{a^2}{\lambda}; \lambda = \gamma - 1); \quad \frac{\partial u_4}{\partial x_4} + u_k \frac{\partial u_4}{\partial x_k} + \lambda u_4 \frac{\partial u_k}{\partial x_k} = 0,$$

$j, k = 1, 2, 3$ ; where  $u_1, u_2, u_3$  denote the projections of the velocity upon the coordinates  $x_1, x_2$ , and  $x_3$ ,  $a$  - the velocity of sound,  $\gamma$  is the ratio of the specific heats,  $x_4$  - time; summation is carried out over

twice occurring indices. In Refs. 1-6 waves of the first order and waves of an order lower by one than the number of unknown quantities are investigated; Ref. 7 dealt with an investigation of double waves for a potential flow of a gas. Here, the double waves are investigated by using a

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An Exact Solution of the Equations of a  
Spatial Non-stabilized Gas Flow of the  
Double-wave Type

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modification of the method given in Ref. 4, without a potential flow being assumed. The author aimed at finding an exact solution of the equations of the spatial non-stabilized gas flow, if the problem contains three arbitrary functions. The way in which this solution may be obtained is sketched out and it is shown that in the most simple case the solution for the potential flow is obtained. There are 7 references: 5 Soviet, 1 US, and 1 Polish. X

ASSOCIATION: Tomskiy gosudarstvennyy universitet im. V. V. Kuybysheva  
(Tomsk State University imeni V. V. Kuybyshev)

PRESENTED: June 17, 1960, by L. I. Sedov, Academician

SUBMITTED: April 20, 1960

Card 2/2

GAL'PERIN, I.M.; KOMAROVSKIY, L.Ye.

Ways for improving the quality of the base of carbon paper. Bum. 1 der.  
prom. no.2:21-23 Ap-Je '63. (MIRA 17:2)

1. Malinskaya bumazhnaya fabrika.

NEM. NIKHIN, Vladimir Nikolayevich; KOMAROVSKIY, Lev Yevseyevich;  
SIMAKOVA, A.N., red.

[Manufacture of thin technical paper] Proizvodstvo tonkikh  
tekhnicheskikh bumag. Moskva, Lesnaia promyshlennost',  
1965. 218 p. (MIRA 18:7)

NEMANIKHIN, V.N.; KOMAROVSKIY, L.Ye.; YAKUBOVICH, S.Z., red.

[Improving the technology of the production of tissue paper] Sovershenstvovanie tekhnologii proizvodstva papirovnoi bumagi. Moskva, TSentr. in-t tekhn. informatsii i ekon. issledovaniy po lesnoi, bumazhnoi i derevoobrabatyvaushchei promyshl., 1962. 34 p. (MIRA 17:7)

KOMAROVSKIY L.Ye.; PRIKHOD'KO, Yu.N.; SOLDATENKO, V.I.;  
MFZJR, V.V.; VESELOVSKAYA, T.I., red.

[Selecting an optimal grinding set for preparing pulp  
for condenser paper] Vybór optimal'noi razmalyvaiushchei  
garnitury pri podgotovke massy dlia kondensatornoi buma-  
gi. Moskva, TSentr. nauchno-issl. in-t informatsii i  
tekhniko-ekon. issledovanií po lesnoi, tselliulozno-  
bumazhnoi, derevoobrabatyvaiushchei promyshl. i lesnomu  
khoz., 1964. 15 p. (MIRA 17:12)